HP StorageWorks Fast Recovery Solution for Windows 2003 user's guide

Microsoft Exchange 2003
Microsoft SQL 2000

product version: 1.00

first edition (March 2004)

part number: B9552-96002

This guide describes how to use the fast recovery solution with Microsoft Exchange 2003 and Microsoft SQL 2000

Printed in the U.S.A.

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Contents

About this guide

This guide provides information about configuring and using HP StorageWorks Fast Recovery Solutions (FRS) 2003 in a Microsoft Windows 2003 environment running Exchange 2003 or SQL 2000. FRS enables quick recovery of Exchange and SQL databases.

FRS combines LUN copy creation and database recovery features for use with HP StorageWorks EVA and HP StorageWorks XP disk arrays. Using the Microsoft VSS (Volume Shadow Copy Service), FRS creates and manages recovery-ready copies of the production Exchange 2003 storage groups or SQL 2000 databases to be used in the event of a disaster. FRS allows you to recover storage groups and databases in minutes rather than the hours typically required for a conventional restore from backup.

Unless otherwise noted, the term *disk array* refers to these disk arrays:

HP StorageWorks Enterprise Virtual Array 5000 (EVA)

HP StorageWorks XP128

HP StorageWorks XP1024

HP StorageWorks VA 7100

HP StorageWorks VA 7110

HP StorageWorks VA 7400

HP StorageWorks VA 7410

Related information For information about the disk arrays, please refer to the owner's manuals.

Prerequisite information

The instructions in this guide are intended for system administrators who have the following skills and knowledge:

- A background in direct access storage device subsystems and their basic functions
- Familiarity with disk arrays (EVA and XP) and related disk array management software such as CommandView EVA and CommandView XP

- An understanding of VSS installation and configuration of the secondary volumes within VSS
- Familiarity with the server operating system Windows 2003
- Familiarity with Exchange 2003 administration
- Familiarity with SQL 2000 administration

For information and documentation about related products, see the HP web site (www.hp.com).

For Exchange 2003 and SQL 2000 information, see the Microsoft web site:

www.microsoft.com

Disk array firmware and software dependencies

This guide describes FRS behavior based on features implemented in the latest disk array firmware and software versions:

XP firmware version 21.07.04

Raid Manager Library version 1.07.03

CommandView XP version 1.7B

EVA firmware 3.01

CommandView EVA version 3.1

VA 7x00 firmware HP14

VA 7x10 firmware A00

Command View SDM version 1.05

Technical support

For the most current information about related products, visit the support web site:

XP www.hp.com/support/stressfree

VA www.hp.com/support/mss

EVA h18000.www1.hp.com/products/storageworks/enterprise/index.html

For information about product availability, configuration, and connectivity, consult your HP account representative.

Revision history

March 2004	First edition for Exchange 2003.

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Fast Recovery Solutions features

HP StorageWorks FRS 2003 for Exchange 2003 and SQL 2000 provides these features:

- Supports HP StorageWorks disk arrays, including the XP1024, XP128, VA 7100, VA 7110, VA 7400, VA 7410, and EVA 5000.
- Provides fast recovery of large Microsoft Exchange 2003 storage groups and SQL 2000 databases
- Minimizes downtime in the event of an Exchange 2003 or SQL 2000 corruption
- Simultaneously recovers multiple Exchange 2003 storage groups or SQL 2000 databases
- Works with multiple backup utilities
- Supports multiple production Exchange 2003 or SQL 2000 servers from a single FRS management server
- Supports Microsoft Cluster
- Includes Command Line Interface (CLI) feature for FRS copy creation
- Creates and maintains multiple point-in-time recovery LUNs

The FRS concept

FRS 2003 is an array-based tool designed to enable fast recovery when Exchange 2003 storage groups or SQL 2000 databases are damaged.

FRS stages recovery-ready copies of databases through interaction with Windows 2003, the disk array, Microsoft VSS, and either the Exchange 2003 or SQL 2000 production server. These copies can be used in the event of damage to the production storage groups or databases.

When a catastrophic event occurs, the Exchange or SQL administrator starts the FRS process. This process replaces the damaged storage group or database with the known, good recovery-ready copy which FRS has created and managed. FRS then brings the newly recovered database online and user access is restored.

Actual time to replace the corrupt storage group or database varies based on the size of the LUN involved and activity taking place on the disk array.

FRS is valuable to enterprises with high availability requirements for their large, centralized Exchange 2003 or SQL 2000 environments. FRS enables such enterprises to improve service level agreements and reduce chances of significant loss due to downtime of their Exchange 2003 or SQL 2000 databases.

FRS and the total HP high-availability solution

HP provides a total high-availability solution package from high-end storage to software and support. Fast Recovery Solutions is part of the high-availability offering, which includes

- Disk arrays
- HP StorageWorks Business Copy XP
- HP StorageWorks Business Copy VA
- HP StorageWorks Business Copy EVA
- HP StorageWorks RAID Manager Library XP
- CommandView SDM
- CommandView XP
- CommandView EVA
- Fast Recovery Solutions
- Servers and software
- Storage consulting services
- Post-sales total solution support

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Prerequisites and limitations

This chapter pertains to both Exchange 2003 and SQL 2000. The following items are described in this chapter:

- Hardware/software checklist
- FRS architecture (illustrations)
- VSS requirements
- *(Exchange 2003 only)* Exchange 2003 server configuration
- *(SQL 2000 only)* SQL 2000 server configuration
- Limitations

Hardware/software checklist

Required for either Exchange 2003 or SQL 2000

- ❒ Disk array
- ❒ HP StorageWorks Business Copy software
- ❒ CommandView
- ❒ *(XP only and a requirement of VSS)* RAID Manager Library
- ❒ Microsoft Windows 2003 Enterprise Edition or Datacenter

Required for Exchange 2003

- ❒ Microsoft Exchange 2003 Server

Required for SQL 2000

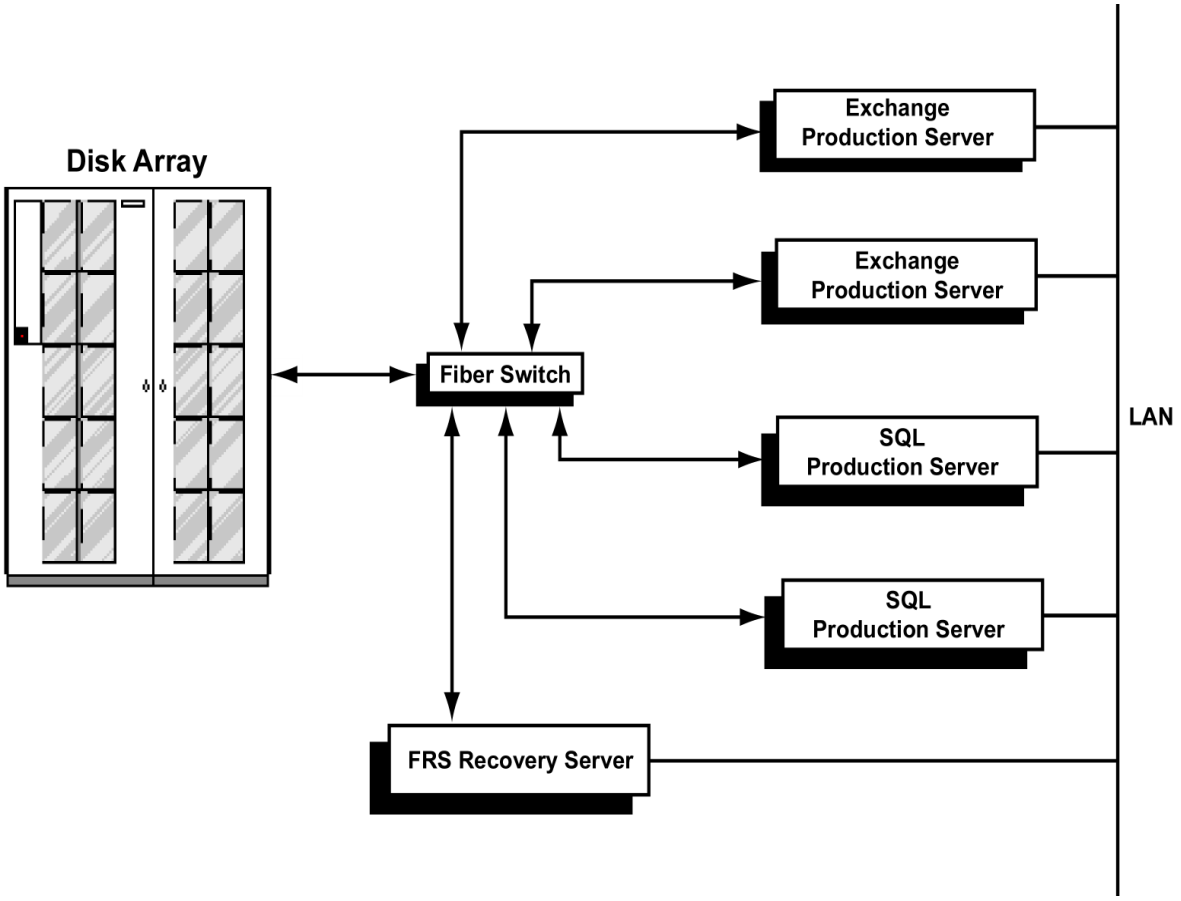
- ❒ Microsoft SQL 2000 server

For all installed products, ensure that the latest patches have been installed.

Server architecture for FRS

XP, VA, or EVA disk array

A possible architecture for using FRS with an XP, VA, or EVA disk array is shown below.



VSS Requirements

FRS 2003 requires that Microsoft Windows 2003 with HP's Volume Shadow Copy Service (VSS) hardware provider be installed and configured on each production server. The FRS management server and each recovery server use VSS configured volumes as recovery volumes. FRS maintains multiple recovery-ready copies of the production data as long as there are VSS-created volumes available to receive the copies.

The EVA VSS hardware provider must be configured for SNAPCLONES, not SNAPSHOTS. Please consult the EVA VSS hardware provider manual for directions.

VSS hardware provider is required. Each array has its own configuration requirements for VSS/VDS hardware provider. Refer to the VSS/VDS hardware provider documentation for more information.

If you need further assistance with VSS configuration, please contact your HP service representative or see the HP Hardware Provider documentation at the following internet location:

http://h20000.www2.hp.com/bc/docs/support/SupportManual/lpg29349/lpg29349.pdf

Exchange 2003 server configuration

FRS 2003 works within the supported limits of Exchange 2003. No more than five databases per storage group and no more than four storage groups per Exchange instance are supported.

FRS 2003 manages Exchange 2003 at the storage group level. The following configuration rules apply:

- All databases within a storage group must reside on one LUN of a supported HP disk array. Databases cannot be separated onto different storage LUNs.
- The logs for each storage group must also reside on an HP disk array LUN, and the logs and the checkpoint file must remain together on the same LUN.
- The LUN that the databases reside on and the LUN that the logs reside on must NOT be the same LUN.

SQL 2000 server configuration

FRS 2003 for SQL 2000 supports SQL 2000 with the most recent patches applied.

Only Windows Authentication is supported with this release of FRS 2003. Windows Authentication allows the Microsoft SQL Server to share the same user name and password used for Windows. This allows you to log into Microsoft SQL Server without supplying a user name and password. Windows Authentication provides other benefits as well. Refer to the Microsoft SQL 2000 documentation for details.

Limitations

FRS 2003 supports Basic disk configuration only. Dynamic disks are not supported.

Only one instance of FRS can be running at one time. Run FRS only from one management console to prevent simultaneous commands to FRS from different sources. This could cause corruption.

Exchange 2003:

FRS 2003 works within the supported limits of Exchange 2003 with the following exceptions:

- All databases within each storage group must reside on one LUN
- Logs for each storage group must reside on an HP disk array LUN
- Logs and checkpoint file must reside together on the same LUN

SQL 2000:

FRS 2003 works within the supported limits of SQL 2000 with the following exceptions:

- Most recent patches must be applied

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Installation

This chapter covers installing and uninstalling FRS and installing FRS licensing.

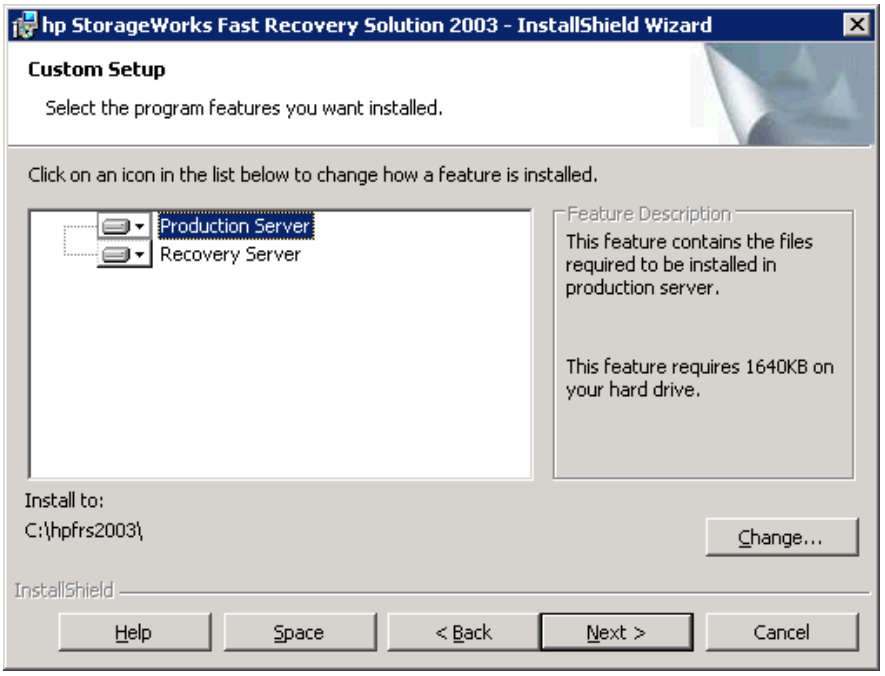
Before installing FRS, ensure that the following has been done. If these items are not done, FRS cannot function properly.

- *(XP only)* RAID Manager Library has been installed on all production and recovery servers.
- Exchange databases within each storage group all reside on the same LUN on the production servers.
- VSS hardware provider has been installed on each production and recovery server.
- VSS has been configured to make recovery LUNs available to FRS.
- Network connectivity is established among the disk array, CommandView stations, and all production and recovery servers.
- CommandView stations are enabled with the appropriate Business Copy licenses.

Installing the production and FRS servers

Installation for each production or recovery server for Exchange 2003 or SQL 2000 is identical, with the exception of the **Custom Setup** window. Follow this procedure for each of the recovery and production servers.

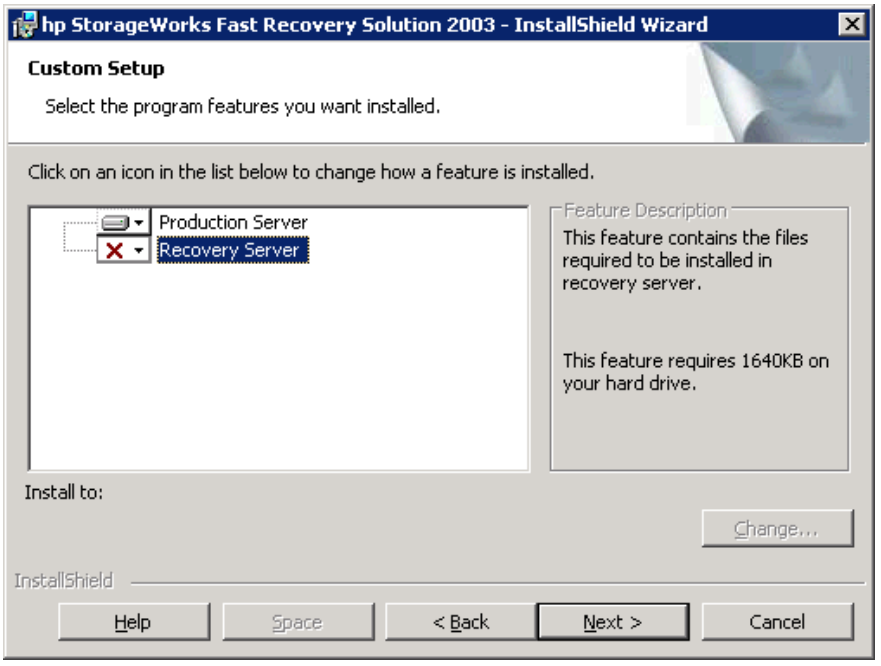
1. Open the FRS CD and launch the **ISScript8.Msi** file. This will ensure that a script engine is available for the installation process. After successfully installing the **ISScript8.Msi** file, you can launch the **hp StorageWorks Fast Recovery Solution 2003.msi** file. The installation wizard opens and presents the **Custom Setup** window.



2. Use the default location shown in the **Install to:** line of the Custom Setup window for installing the files. The **Change** button allows you to browse locations, but it is not recommended that you change the default installation location.
3. Click the disk icon for the type of server you want to install (Production Server or Recovery Server) and leave it selected so that a disk device appears in the pulldown menu. The Feature Description reads, “This

feature contains the files required to be installed in the (production or recovery) server." (Note that production server files should be installed on production servers and recovery server files on the recovery server.)

4. Click the pulldown menu for the component you DO NOT want to install so that an **X** is displayed, indicating the component will not be installed.



5. Click **Next**, and installation begins.
6. When installation completes, click **Finish**.
7. Repeat the installation for any additional servers you want to install.

Uninstalling FRS

You can uninstall FRS in one of two ways: by using the FRS CD or by using the Windows **Add/Remove Programs** feature in the Control Panel.

With either method, the uninstall script prompts you to remove FRS from the system.

To uninstall FRS with the CD:

Open the contents of the FRS CD. Click **setup.exe** to launch the uninstall script.

To uninstall by using Add/Remove Programs:

From the Start menu, select **Settings**, and open **Add/Remove Programs**. Find the HP FRS entry and select it. Click **Change/Remove** to launch the uninstall script.

Licensing FRS

A purchased license is required for long term use of FRS 2003, but AutoPass allows you to download and use a trial version of the software.

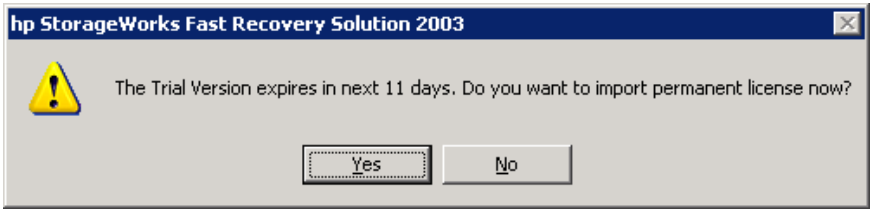
AutoPass feature

The AutoPass feature makes FRS 2003 available to you as a free trial download from the web. This allows you to use five instances of FRS for 60 days. At the end of 60 days FRS 2003 stops functioning unless you enter a purchased license for permanent use.

Please contact your HP representative for information about purchasing and installing a permanent license for FRS 2003.

AutoPass license notification

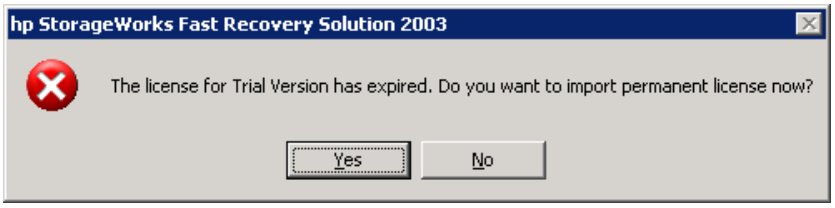
When you start FRS 2003, the following window opens to notify you of how many days remain on your trial version of the software.



If you click **No**, the main FRS window appears and you can continue to use the trial version.

If you click **Yes**, the AutoPass: Import passwords window opens, allowing you to select the file containing the permanent license.

If your AutoPass trial version license has expired, this message appears:

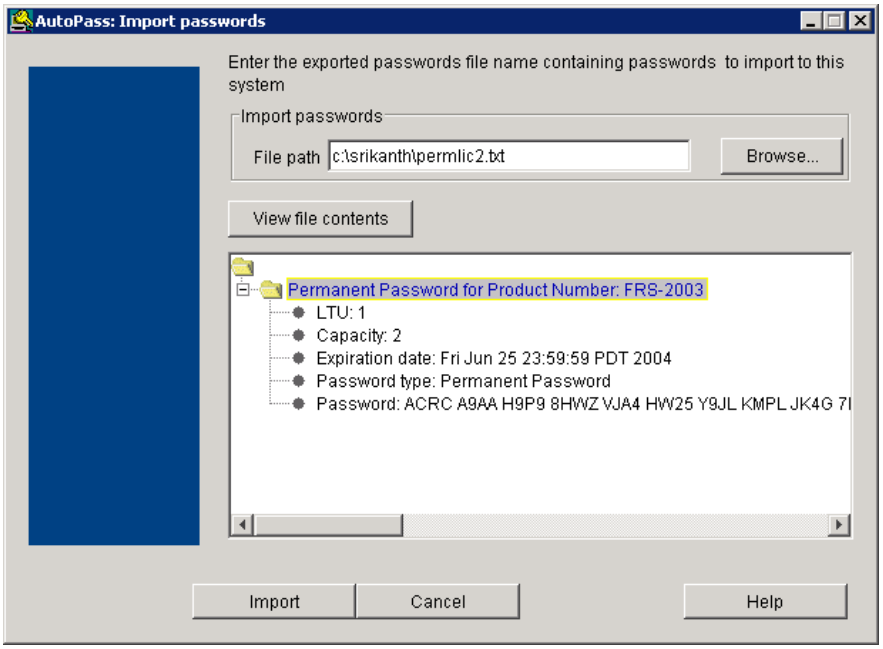


Click **No** to exit FRS, or click **Yes** to install the permanent license.

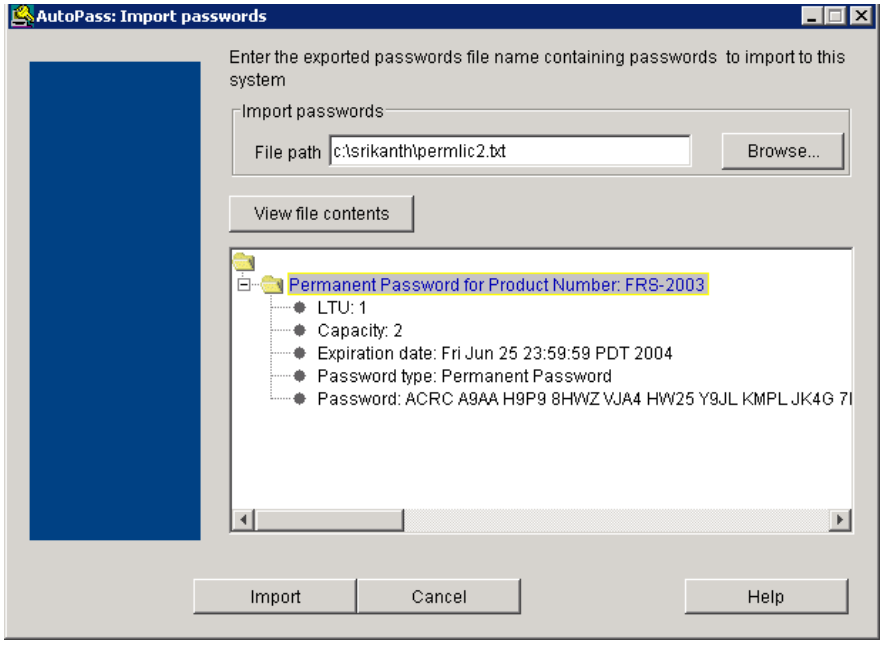
Permanent license installation

Use the following procedure to install the permanent license:

1. When you click **Yes** on one of the preceding license notification windows, the AutoPass: Import passwords window opens.

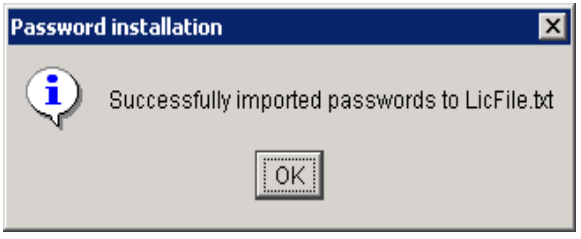


2. Click the **Browse** button to locate the license file. The file path shows in the file path portion of the window.
3. Click the **View file contents** button to display the passwords stored in the license file.



4. Click the password file in the display to highlight it (as shown above).
5. Click **Import** to import the selected password file.

   The message below indicates a successful password import.



6. Click **OK**. This completes permanent license installation.

Instance count check

If you are running too many instances of FRS for the license you own, the following message appears:

This message appears under the following conditions:

- The recovery server is connected to a production server running more than the licensed number of instances.
- A recovery server is connected to multiple production servers and the total number of Exchange and SQL instances running are more than the licensed capacity.
- The product is already running the maximum number of instances when you try to add another instance by clicking **Add Exchange Server Instance** or **Add SQL Server Instance** from the **File** menu.

Command line license installation

If you are installing a permanent license before the trial version expires, a command line application called **ImportLicense.exe** allows you to install the license. This application is provided as a command line alternative to GUI permanent license installation.

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Using FRS

The following items are explained in this chapter:

- Using FRS
- Creating shadow copies
- Executing an FRS 2003 recovery
- Using the command line interface

Using FRS

Opening FRS 2003

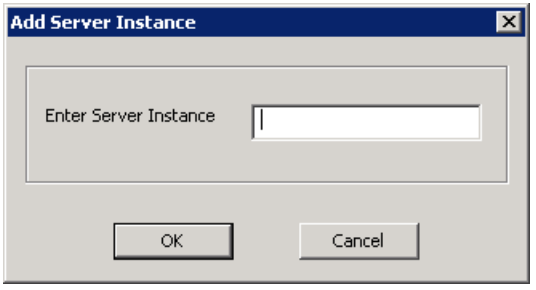
1. Click the Windows **start** button, and select **programs.**
2. Click **Hewlett-packard.**
3. Click **HPFRS 2003.**
4. Click **HP Fast Recovery Solutions 2003**.

   The FRS main window opens.

Adding server instances

1. On the FRS main window, click the **File** pulldown menu and choose either **Add Exchange Server Instance** or **Add SQL Server Instance**.

   The Add Server Instance window opens.

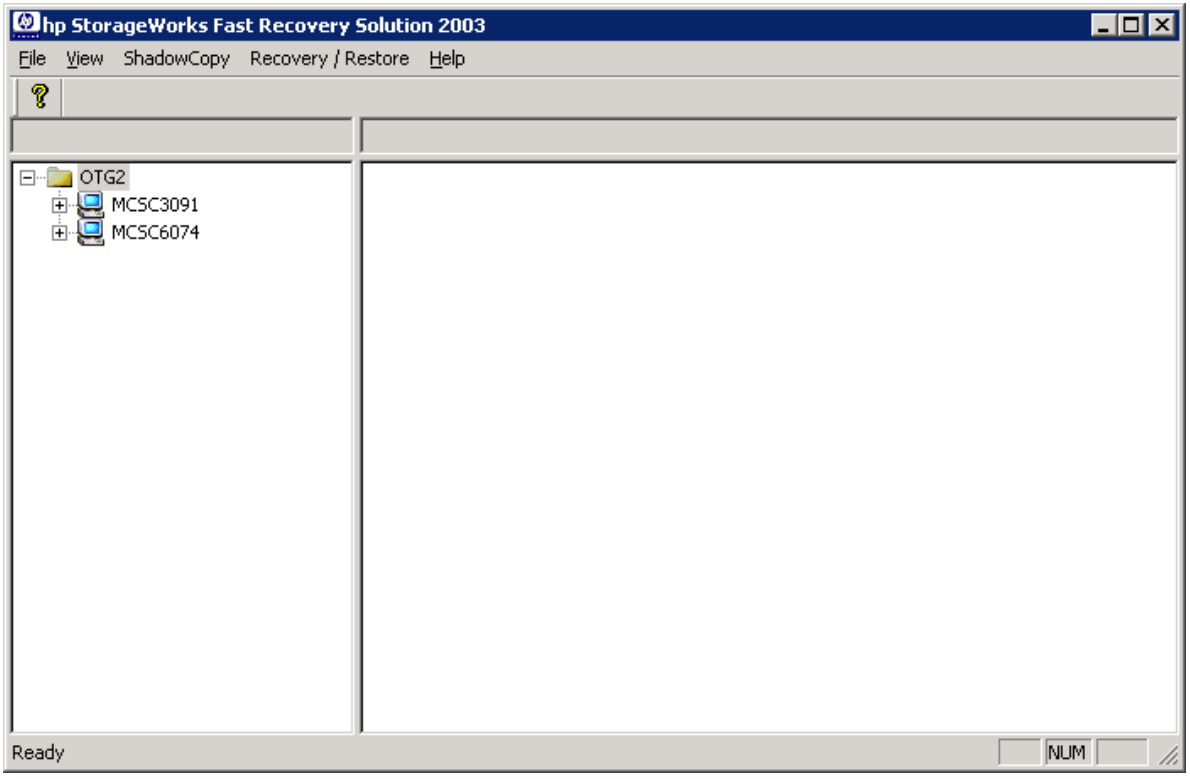


2. In the “Enter Server Instance” box, enter the instance name in the field and click **OK**.

   The FRS main window opens and shows the new server instance in the pane on the left side of the display.

Using the main window

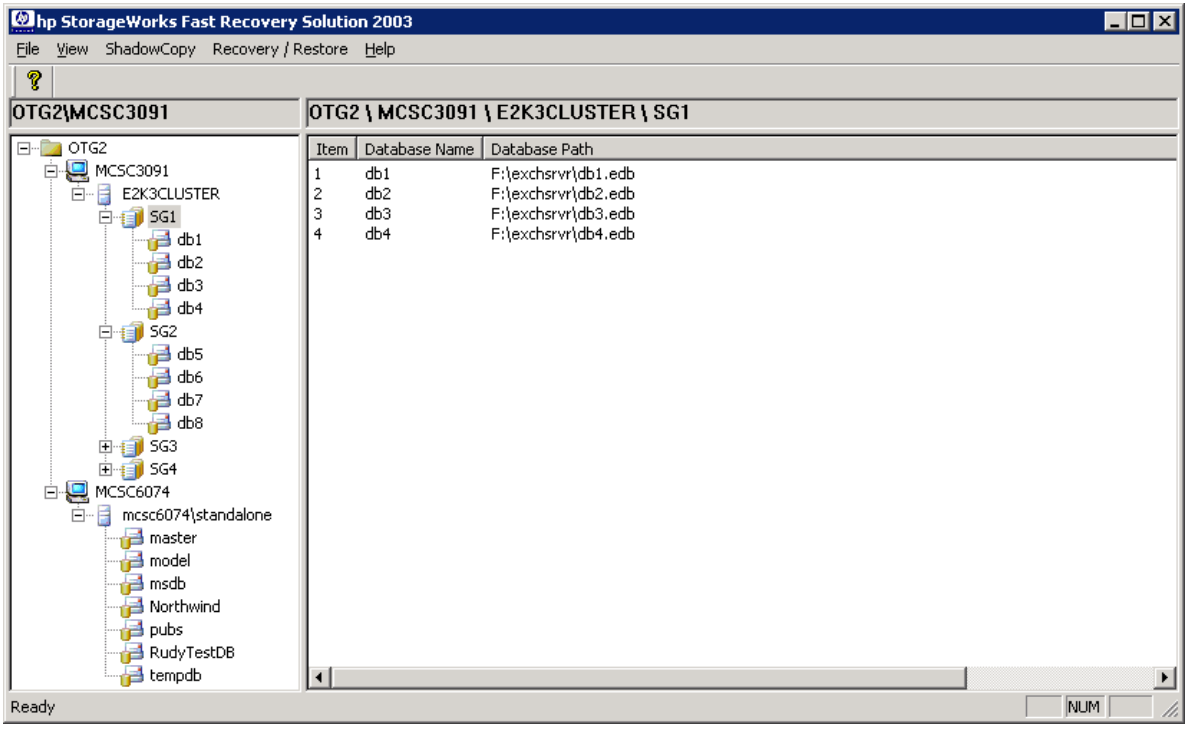
The following shows the FRS 2003 GUI after two server instances have been added: one SQL server and one Exchange server.



To expand a server instance:

1. Click the plus symbol (+) next to a server instance in the left pane of the main window.

   The left pane displays the storage groups and databases for that server below the server.



2. Click a storage group or database to display the location and path of that LUN in the right pane of the main window.

To delete a server instance from FRS management:

1. Click the server instance to highlight it.
2. Click **File** and select "Delete Server Instance."

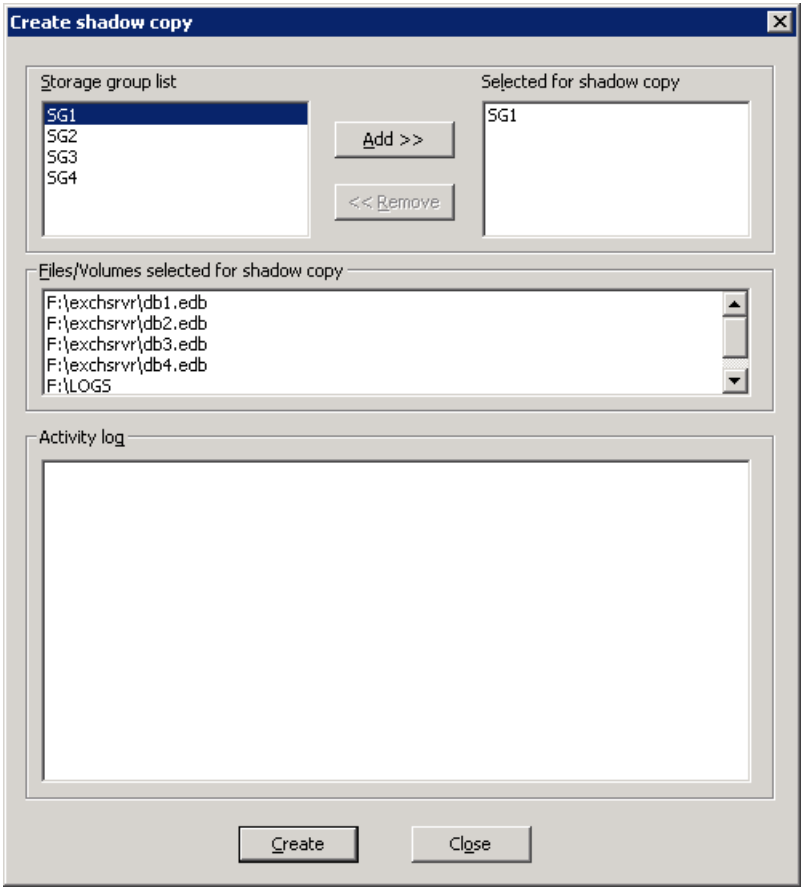
Creating shadow copies

Using FRS 2003 you can create shadow copies of production LUNs. These copies are then managed by FRS 2003. If a production database is lost because of a failure or catastropic event, FRS restores the production database from a copy.

To create shadow copies of production LUNs:

1. Click the server, storage group, or database corresponding to be copied.
2. Click **ShadowCopy** in the menu bar, and select "Create Shadow Copy."

   The Create shadow copy window opens.



3. Select the storage group(s) to be copied and click the **Add** button.

   The storage groups to be copied are displayed in the "Selected for shadow copy" list, and the associated databases are displayed in the "Files/Volumes selected for shadow copy" list.

4. Click **Create** at the bottom of the Create shadow copy window.

   Storage group copying begins. As copying progresses, actions display in the "Activity log" pane of the window. This pane displays a "finished" message when copying is complete.

5. When copying ends, click **Close** to close the window.

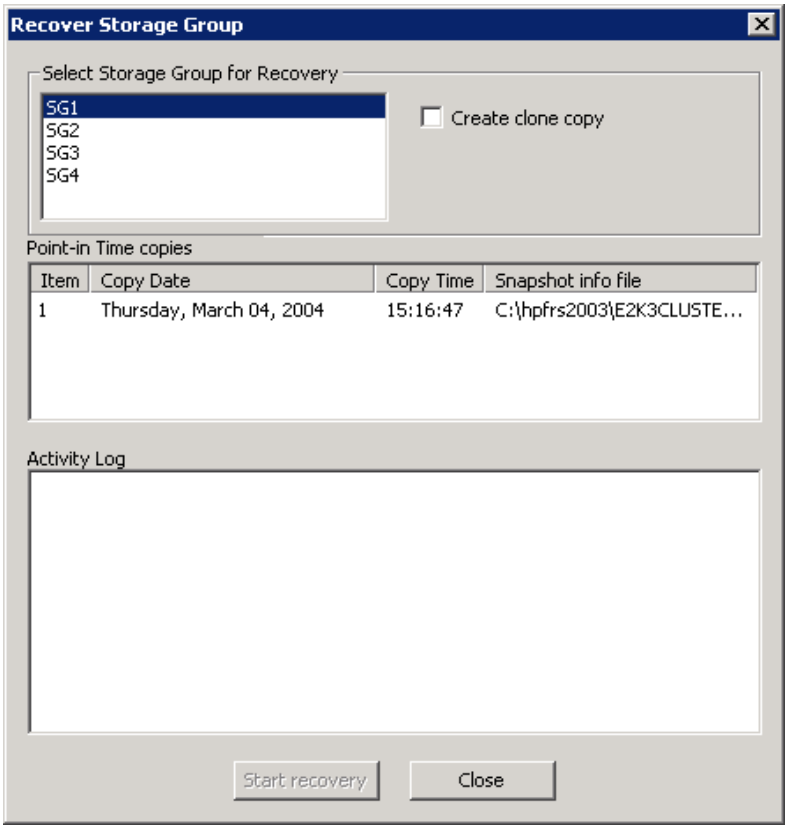
   FRS now has a recovery-ready LUN containing the shadow copy of the storage group or database. You can create shadow copies as often as needed to minimize data loss in the event a recovery is needed.

Executing an FRS 2003 recovery

Using FRS 2003 you can recover a known, good FRS-managed recovery LUN to the production server.

1. Click the storage group or database to be recovered to highlight it.
2. Click **Recovery/Restore** on the menu bar, and select **Recovery**.

   The Recover Storage Group window opens.



3. Select the storage group to be recovered. If there are multiple point-in-time copies of the storage group or database being recovered, all are listed in the “Point-in-Time copies” section of the window. You can select any of these copies to be recovered, but it is advisable to choose the most recent known-good copy.

   Clicking the **Create clone copy** check box creates a copy of the recovery-ready LUN before recovering it.

4. Click **OK** to start the recovery.

   The progress of the recovery displays in the activity log pane.

5. When the log shows that the recovery is finished, click **Close** to close the window.

Using the command line interface

You can run FRS 2003 from a command line to execute copying of production storage groups or databases.

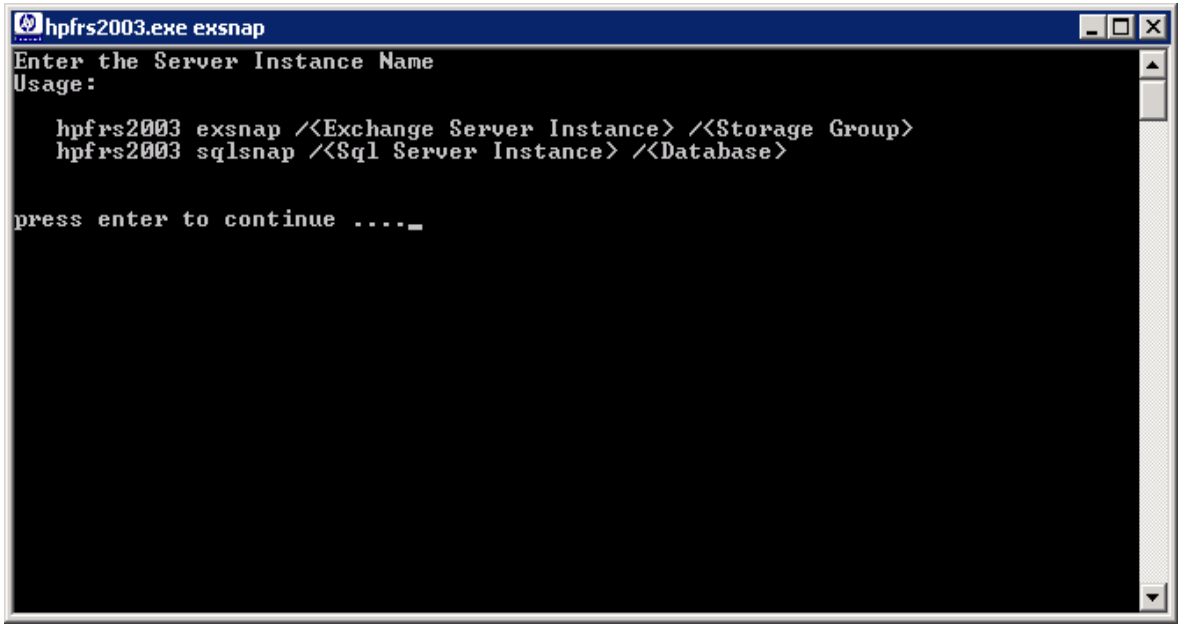
To run FRS from the command line:

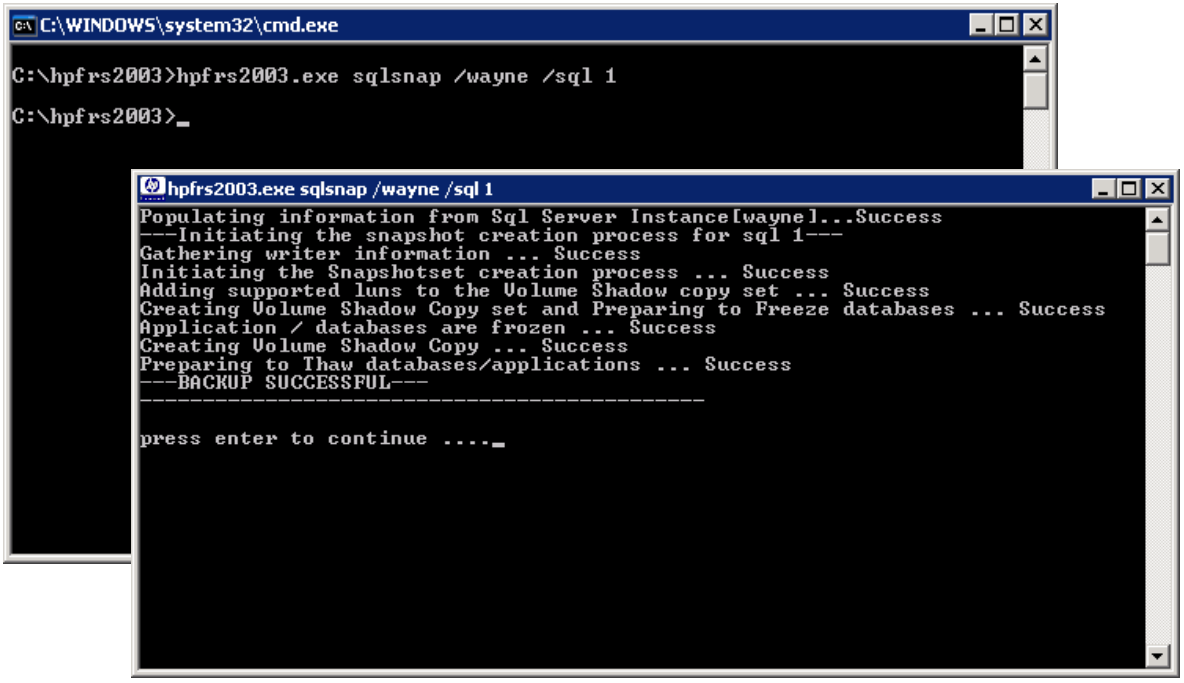
1. Change directory (CD) to the location where FRS is installed.
2. Type one of these commands, and press Enter:

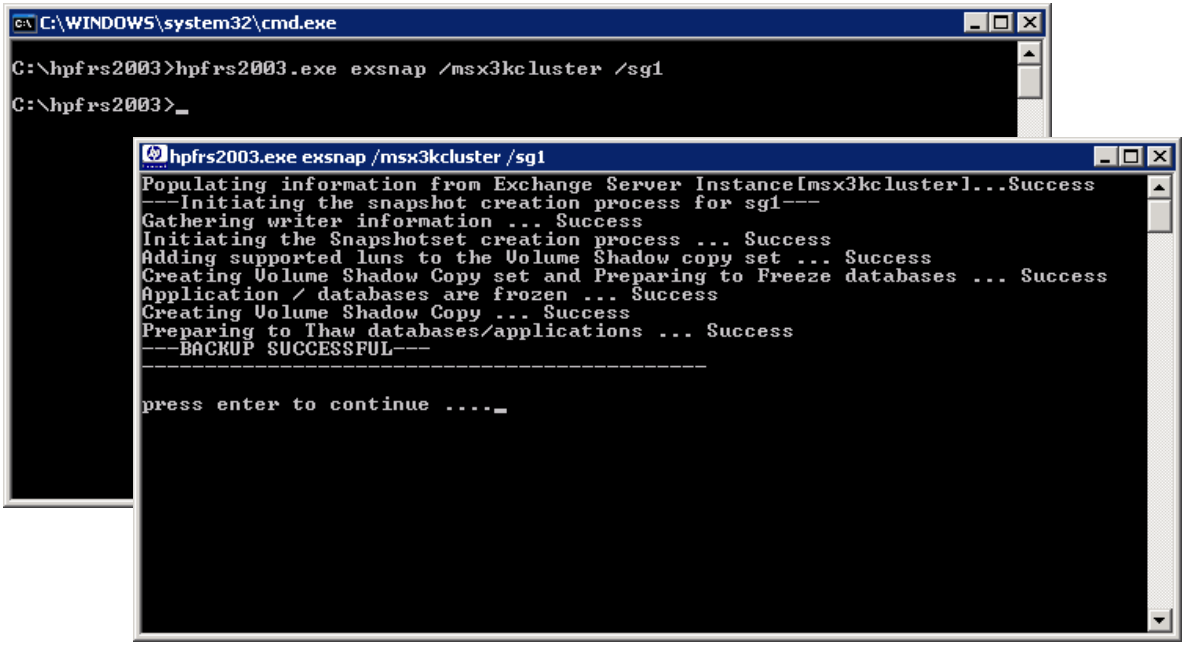
Exchange 2003 **hpfrs2003 exsnap** /<exchange instance name /<storage group name>

SQL 2000 **hpfrs2003 sqlsnap** /<SQL instance name /<database name>

An example of the correct syntax is shown below, and SQL and Exchange examples follow.




C:\WINDOWS\system32\cmd.exe
C:\hpfrs2003>hpfrs2003.exe sqlsnap /wayne /sql 1
C:\hpfrs2003>
hpfrs2003.exe sqlsnap /wayne /sql 1
Populating information from Sql Server Instance[wayne]...Success
---Initiating the snapshot creation process for sql 1---
Gathering writer information ... Success
Initiating the Snapshotset creation process ... Success
Adding supported luns to the Volume Shadow copy set ... Success
Creating Volume Shadow Copy set and Preparing to Freeze databases ... Success
Application / databases are frozen ... Success
Creating Volume Shadow Copy ... Success
Preparing to Thaw databases/applications ... Success
---BACKUP SUCCESSFUL---
press enter to continue ....


C:\WINDOWS\system32\cmd.exe
C:\hpfrs2003>hpfrs2003.exe exsnap /msx3kcluster /sg1
C:\hpfrs2003>
hpfrs2003.exe exsnap /msx3kcluster /sg1
Populating information from Exchange Server Instance[msx3kcluster]...Success
---Initiating the snapshot creation process for sg1---
Gathering writer information ... Success
Initiating the Snapshotset creation process ... Success
Adding supported luns to the Volume Shadow copy set ... Success
Creating Volume Shadow Copy set and Preparing to Freeze databases ... Success
Application / databases are frozen ... Success
Creating Volume Shadow Copy ... Success
Preparing to Thaw databases/applications ... Success
---BACKUP SUCCESSFUL---
press enter to continue ....

Glossary

BC	HP StorageWorks Business Copy XP. Software that creates and maintains local copies of data stored on the disk array. The copies can be used for data duplication, backup, and local disaster recovery.
cluster	The concept of linking individual servers physically and programmatically and coordinating communication between them so they can perform common tasks.
EVA	HP StorageWorks Enterprise Virtual Array.
failover	Process that automatically shifts the workload from one server in a cluster to another server in the event of a failure.
FRS	HP StorageWorks Fast Recovery Solutions.
FRS server	The server where copies of the production database are staged and managed. The FRS server runs the FRS GUI.
LDEV	Logical device. An LDEV is created when a RAID group is divided into pieces according to a selected host emulation mode (that is, OPEN-3, OPEN-8, OPEN-9, etc.). The number of resulting LDEVs depends on the selected emulation mode. The term LDEV is often used synonymously with the term volume.
LUN	Logical unit number. A LUN results from mapping a SCSI logical unit number, port ID, and LDEV ID to a RAID group. The size of the LUN is determined by the emulation mode of the LDEV, and the number of LDEVs associated with the LUN. For example, a LUN associated with two OPEN-3 LDEVs will have a size of 4,693 MB.

LUSE	Logical unit size expansion.
online backup	Backup while Exchange services are still running. There is no interruption in services for backup.
P-VOL	The primary or main volume that contains the data to be copied.
production server	Exchange 2003 or SQL 2000 server.
RAID	Redundant array of independent disks.
recovery server	FRS server. The server where copies of the production database are managed.
shadow copy	A copy of a production database created by FRS and stored on a recovery server for use in restoring the production database in the event of a failure.
S-VOL	Secondary or remote volume. The copy volume that receives data from the primary volume.
Snapclone	Secondary copies of the databases that are created using the EVA storage appliance.
VA	HP StorageWorks Virtual Array.
VSS	Microsoft Virtual Shadow Copy Service.

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